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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/705,730	11/10/2003	Syed Sajid Ahmad	2269-5558I US (99-0253.00	5033

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EXAMINER	
RAO, G NAGESH	
ART UNIT	**PAPER NUMBER**
1722	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/24/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/705,730	AHMAD ET AL.	
	Examiner	Art Unit	
	G. Nagesh Rao	1722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 December 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16 and 23-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16 and 23-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Continued Examination Under 37 CFR 1 .1 14

1) A request for continued examination under 37 CFR 1 .1 14, including the fee set forth in 37 CFR 1 .17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1 .1 14, and the fee set forth in 37 CFR 1 .17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/7/06 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2) Claims 1 and 23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Examiner could not find support in the specification for the amended language in claims 1 and 23 in specific "isolated" with respect to the programmed material consolidation

system and "individually confined" with respect to the fabrication sites of a programmed consolidation system. Furthermore applicant has not provided in the remarks where support for these amended changes can be found in the specification. Therefore claims 1 and 23 are rejected under 112 1st paragraph for new matter.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3) Claims 1-16 and 23-28 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting over claims 1-33 of copending Application No. 10/705,250. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows: Both applications and sets of claims pertain to essentially a programmable material consolidation system comprising at least one fabrication site, if not a plurality of fabrication sites having at least one common component shared amongst the more than one of the plurality of fabrication sites.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application.

Examiner would like to point out that applicants once again did not address the validity of this rejection in the response regarding the co-pending claims of application 10/705,250. Until that is done, examiner cannot, and will not hold this

rejection in abeyance, in full faith drop the rejection until arguments are presented and/or a Terminal Disclaimer is filed.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4) Claims 1-3 rejected under 35 U.S.C. 102(e) as being anticipated by Bradbury (US PG Pub 2002/0007294).

Bradbury 294 pertains to a rapid customizing system for design and remotely manufacturing devices via a computer system. Upon re-review of applicant's current set of claims, examiner understand that the claim is broad to be read upon the idea of a programmable material consolidation system comprised of a central site that collects the information from the plurality of sites whereby it then make one complete command to manufacture a whole array of parts in one run (Section 0059). Examiner has pasted below section 0059 and upon review of this highlighted section feels that it broadly reads on applicant's claimed invention as it correlates to claims 1-3.

"**In three-dimensional printing, economics pushes toward printing a whole tray or bed full of similar parts in one run. Thus, if generic parts were being manufactured, it would be preferable to manufacture a substantial number of them simultaneously. This means assembling a machine instruction file in which instructions for the generic part repeat themselves a substantial number of times. If patient-specific parts are being manufactured, it would also be preferable to manufacture a substantial number of parts in one run, which would mean stringing together the *individual* print instructions for a number of different patients' parts to make one complete set of printing instructions or machine instruction file.**"

In other words there is a central site that has a plural number of sites created these are sites programmed to be manufactured and that information is then collected and processed at the central site. The simultaneous production of similar parts on a tray or bed equates to a production site on the tray or bed for each article produced. It would be inherent that the sites be individual confined or isolated as applicant claims, because you would not the material for one product creation to run over into the creation of the next product for it would be a waste of material. Thus it would be inherent to have each product manufactured separately from one another.

Examiner would like to reiterate that due to the broadness of claims 1-3, that Bradbury 294 does indeed teach a plurality of programmed material consolidation

sites; and at least one common component useful with more than one of the plurality of programmed material consolidation sites, including that the system be comprised of a programmed material consolidation system and location control element. (See Sections 0052, 0059, Abstract and Col 1 Section 0007).

5) Claims 1-4, 7-10, and 11-16 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 3,889,355 to Aronsatein.

Aronsatein 355 teaches a programmable material consolidation system (Col. 16, lines 1-68), comprising: at least one fabrication site (reads on programmed material consolidation site) for fabricating one or more objects using a programmed material consolidation process (Col. 26, lines 14-19; Col. 6, lines 3-49; Col. 11, lines 10-44); and a substrate handling system configured to introduce one or more substrates into the at least one fabrication site (isolated or individually confined) and remove the one or more substrates from the fabrication site (Col. 26, lines 14-36).

Aronsatein 355 furthermore teaches the programmable material consolidation system, wherein the substrate handling system comprises a rotary feed system (Col. 9, lines 1-14), and wherein the substrate handling system comprises a linear feed system (Col. 26, lines 14-36). As well at least one

fabrication site comprises a plurality of fabrication sites (reads on programmed material consolidation sites) (Col. 26, lines 14-36), and capable of being configured to introduce the one or more substrates into each of the plurality of fabrication sites (Col. 26, lines 14-36).

Aronsatein 355 also teaches a device further comprising: a cleaning component for cleaning the one or more substrates (Col. 8, lines 65-68). As well Aronsatein 355 teaches a substrate handling system that is configured to transport the one or more substrates having at least one feature fabricated thereon from the at least one fabrication site to the cleaning component (Col. 8, lines 65-68), and wherein the at least one fabrication site comprises a plurality of fabrication sites (Col. 11, lines 59-68; Col. 18, lines 61-68), and wherein the substrate handling system is configured to transport substrates from each of the plurality of fabrication sites to the cleaning component (Col. 11, lines 59-68).

Aronsatein 355 teaches the programmable material consolidation system of further comprising: at least one processing element for controlling operation of the substrate handling system (Col. 24, lines 17-41).

Aronsatein 355 finally teaches the programmable material consolidation system wherein the at least one processing element is configured to orchestrate

movement of substrates from the plurality of fabrication sites to the cleaning component (Col. 24, lines 17-41).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6) Claims 1-5, 7-8, and 10-16 rejected under 35 U.S.C. 103(a) as being unpatentable by Grigg (US Patent No. 6,337,122) in view of Tischler (US PG Publication 2003/0114016).

Grigg 122 pertains to an apparatus for three-dimensional fabrication with photo-curable resins indicating its capability of being used in a stereolithographic manner, wherein it is taught a programmed material consolidation system comprised of a plurality of fabricated layers and at least one common component useful with more than one of the plurality of fabricated layers (Col 5 Lines 65-68 and Col 6 Lines 1-10 See Figure 10 Element 14 and Col 7 Lines 20-30)), wherein the material consolidation system comprises a location control element which is capable of being configured to direct consolidating energy to a selected fabrication site (96, Col 9 Lines 8-15). Furthermore the location control element is comprised of a plurality of galvanometers and a mirror (94 Col 9 Lines 8-15), a linear system aiding in the platform that operates as the substrate handling system wherein it is capable of being configured to transport at least one substrate and a cleaning component in the form of a recoater blade (102) which is employed to level the surface and thickness of material deposited onto the susbtrate or platform (90) (See Abstract, Figure 9 Col 8 Lines 55-68, Col 9 Lines 1-9 and Col 10 Lines 18-32).

However Grigg 122 fails to teach a plurality of programmed material consolidation sites within the apparatus to work on multiple substrates in an isolated manner.

In a process tool apparatus, Tischler 016 pertains to a carrier tool configured to work on a plurality of fabrication sites in an isolated manner or individually confined manner (See Fig 3 Element 60), where the susceptor 60 has in its top surface (62) three recesses (66,68, and 70) sized to accommodate a wafer carrier as a site means capable for fabricating three dimensional objects on the site (See Sections 0067-0073).

It would have been obvious at the time of the invention to one with ordinary skill in the art to modify the teachings of Grigg 122 with that of Tischler 016 in order to take advantage of the multiple fabrication sites in order to optimize more work area space for rapid production and prototyping.

7) Claims 6, 9, 23-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grigg (US Patent No. 6,337,122) in view of Tischler (US PG Publication 2003/0114016) in further view of Yamamoto (US Patent No. 5,151,813).

From the aforementioned the hypothetical device taught by Grigg 122 and Tischler 016 pertains to an apparatus for rapid prototyping of three-dimensional fabrication over a plurality of fabrication sites.

However Grigg 122 lacks the specified teaching of incorporating a plurality of mirrors or a rotary feed system for handling the substrate.

Yamamoto 813 pertains to an apparatus for producing three-dimensional objects, whereby it is taught to use a rotary feed system (14') in conjunction with a plurality of mirrors (16 and 16') in order to allow for a rotational means of the photocurable resin to be exposed to the laser reflected off the plurality of galvano mirrors onto the material enabling a more thorough UV exposure for the photocurable resin (See Col 5 Lines 35-50 and Col 6 Lines 13-41).

It would have been obvious at the time of the invention to one with ordinary skill in the art to modify the teachings of Grigg 122 and Tischler 016 with that of Yamamoto 813 in order to enable more thorough and optimal processing conditions for the photocurable materials.

8) Claims 23-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 4,027,246 to Caccoma in view of U.S. Pat. No. 3,889,355 to Aronsatein.

Caccoma 246 teaches a programmed material consolidation method for fabricating objects (Col. 8, lines 25-34), comprising: selecting at least one first substrate; introducing the at least one first substrate into a first fabrication site (that is individually confined) with a substrate handling system associated therewith; selecting at least one second substrate; and introducing the at least one second

substrate into a second fabrication site with the substrate handling system (See Abstract).

Caccoma 246 teaches the method introducing the at least one second substrate is effected while one or more objects are being fabricated on the at least one first substrate (Col. 11, lines 51-55), as well further comprising: selecting at least one third substrate; and introducing the at least one third substrate into a third fabrication site with the substrate handling system (Col. 11, lines 62- Col. 12, line 4). Also taught by Caccoma 246 is the introducing the at least one third substrate is effected while one or more objects are being fabricated on both the at least one first substrate and the at least one second substrate (Col. 11, lines 51-55), removing the at least one first substrate from the first fabrication site with the substrate handling system while one or more objects are being fabricated on the at least one second substrate (Col. 11, lines 51-55).

Caccoma 246 teaches all the limitations set forth above, and Caccoma 246 clearly cross references the semiconductor wafer processing sectors of Aronsatein 355 several times, for example, in column 7, lines 13-15 and column 8, lines 25-34. However, Caccoma 246 fails to clearly teach that semiconductor wafer processing sectors of Aronsatein 355 fabricate at least a portion of at least one object by a programmed material consolidation process. The examiner respectfully

submits that the claims, as such, do not even require that the portion of the object fabricated, the object, or the fabricating be related to any substrates selected or introduced.

Caccoma 246 teaches all the limitations set forth above, however, fails to clearly teach transporting the a substrate to a cleaning component with the substrate handling system following removing of the substrate. Caccoma 246 teaches all the limitations set forth above, however, fails to clearly teach introducing another substrate into a fabrication site with the substrate handling system following removing of a substrate. Also Caccoma 246 teaches all the limitations set forth above, however, fails to clearly teach removing a substrate from a fabrication site with the substrate handling system while an object is being fabricated on both the substrate and another substrate.

However, the Aronsatein 355 reference that is cross referenced by the Caccoma 246 reference and shares a common assignee with Caccoma 246, teaches analogous art, wherein the same semiconductor wafer processing sectors referenced by Caccoma 246 fabricate at least a portion of at least one object by a programmed material consolidation process (Col. 26, lines 14-19; Col. 6, lines 3-49; Col. 11, lines 10-44). As well Aronsatein 355 teaches transporting the a substrate to a cleaning component with the substrate handling system following

removing of the substrate (Col. 8, lines 65-68); referring to back to Aronsatein 355 teaches introducing another substrate into a fabrication site with the substrate handling system following removing of a substrate (Col. 24, lines 17-41); and referring back to Aronsatein 355 also teaches removing a substrate from a fabrication site with the substrate handling system while an object is being fabricated on other substrates (Col. 9, lines 14-49; Col. 10, lines 35-45).

Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the teachings of Caccoma 246 with the teachings of Aronsatein 355, who's patent is cross referenced several times in Caccoma 246. One of ordinary skill in the art would have been motivated to combine these references because Aronsatein 355 teaches a complete manufacturing system capable of fast turn-around, maximized yield and low in-process inventory with interdependent minimization of processing cycle time and maximization of completed part yield (Col. 1, lines 4-19). Furthermore, Aronsatein 355 clearly teaches "parts of the photolithographic operations are distributed throughout the line in a manner designed to maximize yield and minimize control complexity" (Col. 6, lines 46-49). Further still, Aronsatein 355 clearly teaches "Each of the sectors is also envisioned to be under suitable control, either by general purpose computer or a hard-wired system, to specify and

maintain process parameters, and to maintain proper flow of work-pieces for the sector." (Col. 3, lines 42-47).

Response to Arguments

9) Applicant's arguments filed 12/7/06 have been fully considered but they are not persuasive. Examiner has read applicant's response and appreciates what is being argued but respectfully disagrees.

A) An ODP rejection was made, and examiner cannot drop the validity of the rejection unless addressed properly and/or a terminal disclaimer is filed. Neither of which was done, thus the ODP stands.

B) Applicants contend that Bradbury 294 refers to a vastly different invention and concept than what is applicant's claimed invention. Whether that is the case, examiner cannot read the specification into the claims. What applicants have argued is their claimed invention relates to information in their specification none of which was claimed in claims 1-3, therefore Bradbury 294 is applicable until applicant's appropriately limit the scope of their invention down to what it really is.

C) The amend changes from plurality of fabrication sites to now "isolate" or "individually confined" programmed material consolidation sites does not limit the claim when in consideration to the Aronsatein 355, Caccoma 246, Grigg 122, Tischler 016, and Yamamoto 813 references. The argument that these references refer to semiconductor substrate production and not stereolithography apparatus is moot, because once again there is no mention in the claims that the apparatus refers to a stereolithography apparatus. The broadness and scope of the current claims allow for not only these related technologies but also Bradbury 294 to read on said claimed invention.

D) Examiner appreciates applicant's arguments against the 102 and 103 rejections pertaining to Bradbury, Aronsatein, Grigg, Tischler, and Yamamoto. However what applicant is arguing as to the differentiation of the prior art to applicant's invention is understood but not claimed. Applicant is arguing semantics over the use of the words and what is entailed in their invention from their specification but clearly not claimed in the language itself. For example applicant proceeded to argue against the 102 rejection of Bradbury as to what it discloses accroding to sections 38 and 40 and examiner understands what is being argued, but examiner did not cite sections 38 and 40 as being the main body of language reading on claim 1. Examiner noted section 59 where each part is a "site" that are

strong along together in "pluralistic form" and manufactured via a network at the same time in "in one run" binding them together to have that "at least one common component". Examiner is reiterating that applicant re-read section 59 of Bradbury. It is examiner's position that this rejection as well the other rejections were applied properly and stand at this time.

E) As noted above in the rejection the amended language of incorporating "isolated" or "individually confined" does not change the scope of the invention to overcome the prior art rejection. As noted it would be inherit with Bradbury 294, or as can be seen in Tischler 016, or Aronsatein 355 that there are programmed consolidation sites that have isolation parameter to them in a plural sense. The main factor being that you don't want the material to overflow from site to the other so as not to waste the material or the operator may be fabricating a different product in the adjacent site and therefore you would not want the previous material deposited to make the product in one site utilized in the next site.

F) Applicant is advised to re-write the claim and get to the "gist" of the invention in order for the application to proceed further.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to G. Nagesh Rao whose telephone number is (571) 272-2946. The examiner can normally be reached on 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on (571)272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ROBERT DAVIS
PRIMARY EXAMINER
GROUP 1300

GNR

1/21/07